

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
7 October 2004 (07.10.2004)

PCT

(10) International Publication Number
WO 2004/086517 A3

(51) International Patent Classification⁷: H01L 31/07, 31/108, 31/028, 31/18

(21) International Application Number:
PCT/IB2003/006283

(22) International Filing Date:
23 December 2003 (23.12.2003)

(25) Filing Language: Italian

(26) Publication Language: English

(30) Priority Data:
TO2003A000228 27 March 2003 (27.03.2003) IT

(71) Applicant (for all designated States except US): C.R.F.
SOCIETÀ CONSORZIALE PER AZIONI [IT/IT]; Strada
Torino, 50, I-10043 Orbassano (Torino) (IT).

(72) Inventor; and

(75) Inventor/Applicant (for US only): PIZZI, Marco [IT/IT];
Lungo Po Antonielli 189, I-10100 Torino (IT).

(74) Agents: NOTARO, Giancarlo et al.; c/o Buzzi, Notaro
& Antonielli d'Oulx S.r.l., Via Maria Vittoria 18, I-10123
Torino (IT).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

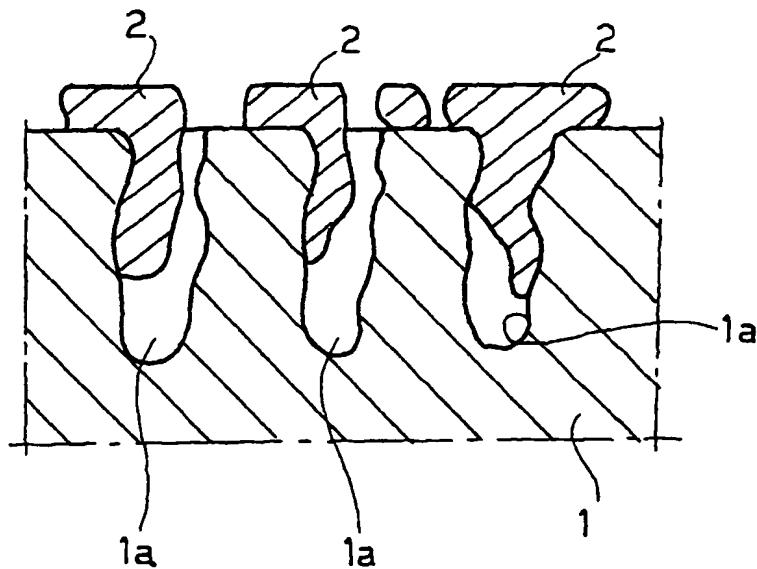
Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
14 April 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: JUNCTION FOR PHOTOVOLTAIC CELLS, OPTICAL SENSORS OR THE LIKE



(57) Abstract: A junction for photovoltaic cells, optical sensors or the like comprises a microporous or nanoporous silicon layer and a metal or semiconductor layer deposited so as to fill at least partially the pores of the silicon layer.

INTERNATIONAL SEARCH REPORT

IB 03/06283

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 H01L31/07 H01L31/108 H01L31/028 H01L31/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ÜNAL BAYRAM ET AL: "Spectral response of porous silicon based photovoltaic devices" JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS, NEW YORK, US, vol. 87, no. 7, 1 April 2000 (2000-04-01), pages 3547-3553, XP012049781 ISSN: 0021-8979 page 3548, column 2, paragraph 2	1-7
A	US 4 990 988 A (LIN ET AL) 5 February 1991 (1991-02-05) column 3, line 28 - line 30; claim 1; figure 1c column 2, line 31 - line 37 column 3, line 24 - line 25	8-10
X		1-3, 6, 7
A		8-10
		-/-

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the International filing date but later than the priority date claimed

- *T* later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the International search 22 February 2005	Date of mailing of the International search report 01/03/2005
---	--

Name and mailing address of the ISA
 European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Roy, C

INTERNATIONAL SEARCH REPORT

IB 03/06283

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HALIMAoui A ET AL: "COVERING AND FILLING OF POROUS SILICON PORES WITH GE AND SI USING CHEMICAL VAPOR DEPOSITION" JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 78, no. 5, 1 September 1995 (1995-09-01), pages 3428-3430, XP000541607 ISSN: 0021-8979 paragraph '0001! -----	1, 7
A	VERNON S M ET AL: "HIGH PERFORMANCE POROUS SILICON SOLAR CELL DEVELOPMENT" WORLD CONFERENCE ON PHOTOVOLTAIC ENERGY. WAIKOLOA, DEC. 5 - 9, 1994, NEW YORK, IEEE, US, vol. VOL. 2 CONF. 1, 5 December 1994 (1994-12-05), pages 1583-1586, XP000680126 ISBN: 0-7803-1460-3 figure 1 -----	1, 7

INTERNATIONAL SEARCH REPORT**IB 03/06283**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4990988	A 05-02-1991	NONE	